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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,150

10/18/2006

Koichi Shimokawa

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EXAMINER

GOLOBOY, JAMES C

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

08/18/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/586,150	Applicant(s) SHIMOKAWA, KOICHI	
	Examiner JAMES GOLOBOY	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-24 is/are rejected.
- 7) ☒ Claim(s) 19-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's amendments filed 6/7/10 overcome the rejections set forth in the office action mailed 2/5/10. New grounds of rejection necessitated by the amendments are set forth below.

Claim Objections

2. Claims 18-24 are objected to because of the following informalities: Claims 18 and 21, as well as their dependent claims, recite a lubricant comprising "as a main component, a perfluoropolyether compound which is not smaller than 85%." "85%" is not a proper measurement of the size of a perfluoropolyether compound. It is the examiner's opinion that applicant has actually attempted to recite the concentration of perfluoropolyether in the lubricant composition, and that interpretation has been used in the rejections set forth below. The examiner recommends that "not smaller than 85%" be replaced by "present in an amount of at least 85% by weight based on the total weight of the lubricant". Claim 24 should be similarly corrected. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Ishida.

In paragraph 5 Ishida discloses lubricants to be coated on a magnetic disk. In paragraph 10 Ishida discloses that the lubricant is a perfluoropolyether, meeting the limitations of claim 19.

4. Claims 19-20 is rejected under 35 U.S.C. 102(b) as being anticipated by Shimokawa.

Shimokawa, in paragraphs discloses a magnetic recording medium containing a lubricating layer, which can be a perfluoropolyether, meeting the limitations of claim 19. In paragraphs 8, 10, and 12 Shimokawa discloses suitable lubricant with molecular weights and molecular weight distributions within the range recited in claim 20.

Claim Rejections - 35 USC § 103

5. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimokawa in view of Gui (U.S. Pat. No. 6,099,937).

The discussion of Shimokawa in paragraph 4 above is incorporated here by reference. In paragraphs 8 and 10-12 Shimokawa discloses that Fomblin ZDOL, which has hydroxyl end groups, is a suitable perfluoropolyether, meeting the limitations of claim 17. In paragraph 6 Shimokawa discloses that the perfluoropolyether lubricant is refined by a method which can include distillation under reduced pressure, which will include degassing, vaporizing the lubricant, and purifying the lubricant by liquefying, but does not explicitly disclose liquefying the vaporized lubricant within a distance less than the mean free path of the perfluoropolyether molecules. Shimokawa also does not does not specifically disclose polyfluorotetraols as recited in claim 18.

Gui, in column 1 lines 14-17 and column 5 lines 31-47, discloses a perfluoropolyether lubricant with a narrow molecular weight distribution, similar to that of Shimokawa. In column 6 lines 52-54 Shimokawa discloses that molecular distillation, which meets the limitations regarding the liquefaction of the lubricant within a distance less than the mean free path of the molecules, is a suitable method of obtaining such lubricants. The use of molecular distillation as the reduced-pressure distillation technique of Shimokawa meets the limitations of claim 16. In column 5 line 64 and column 6 lines 9-14 Gui discloses that the perfluoropolyether can be by fractionation of commercial perfluoropolyethers such as Fomblin ZTETRAOL, meeting the limitations of claim 18.

It would have been obvious to one of ordinary skill in the art to prepare the perfluoropolyether lubricant of Shimokawa by the molecular distillation process of Gui, as Gui teaches that it is a suitable method of preparing a perfluoropolyether with a narrow molecular weight distribution. It would have been obvious to one of ordinary skill in the art to use the ZTETRAOL of Gui as the perfluoropolyether of Shimokawa, as Gui teaches that it is suitable for fractionation into the narrow molecular weight range of Gui and use in a magnetic recording medium.

6. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida.

The discussion of Ishida in paragraph 3 above is incorporated here by reference. In paragraph 5 Ishida discloses lubricants to be coated on a magnetic disk. In

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paragraph 10 Ishida discloses that the lubricant is a perfluoropolyether with a molecular weight distribution of 1.5 or less, encompassing the range recited in claims 20-21, and in paragraph 15 discloses that the number average molecular weight can be at least 5500, which also leads to a weight average molecular weight of at least 5500, overlapping the range recited in claims 20-21. In paragraphs 25-31 Ishida describes the magnetic disks, as recited in claim 21, which can include a negative pressure slider as recited in claim 23. In paragraph 30 Ishida discloses that the disk can be of a load/unload type, as recited in claim 22. In paragraphs 27-28 Ishida discloses that the disks comprise a carbonaceous protective layer, as recited in claim 21.

The only difference between Ishida and the currently presented claims is that some of the ranges of Ishida overlap the claimed ranges instead of falling within them. See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);" Claims 20-23 are therefore rendered obvious by Ishida.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida in view of Fomblin.

The discussion of Ishida in paragraph 3 above is incorporated here by reference. Ishida discloses a perfluoropolyether lubricant meeting the limitations of claim 19. In paragraphs 10-11 Ishida discloses that more than 90% of the perfluoropolyethers are

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substituted with organic functional groups, encompassing the range recited in claim 24, but does not specifically disclose perfluorotetraols.

Fomblin teaches hydroxyl-group containing perfluoropolyethers suitable for use in lubricating magnetic disk drives. Fomblin Z TETRAOL is a perfluoropolyether meeting the limitations of claim 24. The use of Fomblin Z TETRAOL as the terminally functionalized perfluoropolyether of Ishida therefore meets the limitations of claim 24.

It would have been obvious to one of ordinary skill in the art to use Fomblin Z TETRAOL as the functionalized perfluoropolyether of Ishida, as Fomblin teaches that it is a suitable perfluoropolyether for lubricating magnetic disk drives.

Response to Arguments

8. Applicant's arguments filed 6/8/10 have been fully considered but they are not persuasive. Regarding Shimokawa, applicant argues that there is no teaching of the necessity of degassing and vaporizing steps. However, a reduced-pressure distillation will implicitly perform the steps of degassing under reduced pressure and vaporizing the lubricant. Applicant argues that Shimokawa does not teach the step of liquefying within the mean free path of the molecules, but Gui addresses this limitation. Applicant argues regarding claim 19 that Shimokawa does not teach a lubricant where the perfluoroethers content is greater than 85%, but a perfluoropolyether by definition must contain more than 85% perfluoropolyether. Shimokawa does not disclose any required components for the lubricant other than perfluoropolyether.

Regarding Ishida, applicant argues that Ishida does not disclose degassing, vaporizing, and liquefying perfluoropolyether, but this is irrelevant to claims 19, 21, and their dependent claims since those claims do not incorporate any method steps.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES GOLOBOY whose telephone number is (571)272-2476. The examiner can normally be reached on M-F 9-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JCG/

/Glenn A Caldarola/
Supervisory Patent Examiner, Art
Unit 1797